

Application Serial No. 10/656,305
Amendment dated May 23, 2005
Reply to Office Action dated December 1, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended): An internal combustion engine, comprising:

a carburetor;

a fuel tank;

a fuel line and a vent line each fluidly communicating said fuel tank and said carburetor; and

a control valve responsive to vacuum produced within said engine during running of said engine, said control valve including a valve member movable between a first position in which said valve member prevents fluid communication between said fuel tank and said carburetor through at least one of said fuel line and said vent line, and a second position in which said valve member allows fluid communication between said fuel tank and said carburetor through said fuel line and said vent line.

2. (canceled)

3. (currently amended): The engine of ~~Claim 2~~ Claim 1, wherein movement of said valve member to said second position is responsive to vacuum produced within said carburetor during running of said engine.

4. (original): The engine of Claim 3, further comprising a vacuum line fluidly communicating said control valve and said carburetor, whereby vacuum within said carburetor is communicated to said control valve during running of said engine to move said valve member to said second position.

5. (canceled)

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6. (original): The engine of Claim 1, wherein said valve member blocks fluid communication between said fuel tank and said carburetor through said fuel line and said vent line when said valve member is in said first position.

7. (original): The engine of Claim 1, wherein said control valve comprises a portion of said carburetor.

8. (original): The engine of Claim 1, wherein said control valve further includes a spring, said spring biasing said valve member to said first position.

9. (original): The engine of Claim 1, wherein said control valve allows fluid communication through said vent line prior to allowing fluid communication through said fuel line as said valve member moves from said first position to said second position.

10. (original): The engine of Claim 1, wherein said fuel tank includes an inlet to which a fuel tank cap is attached, said fuel tank cap sealing said inlet to prevent communication between said fuel tank and the atmosphere.

11. (original): The engine of Claim 1, wherein said vent line connects said fuel tank to an intake portion of said carburetor.

12. (original): The engine of Claim 1, wherein said fuel line connects said fuel tank to a fuel bowl of said carburetor.

13. (currently amended): A carburetor, comprising:
a carburetor body having a throat;
a fuel bowl including a fuel inlet and a vent inlet separate from said fuel inlet;
a vent inlet; and
a control valve including a valve member movable between a first position in which said valve member prevents fluid communication through at least one of said fuel inlet and

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said vent inlet and a second position in which said valve member allows fluid communication through said fuel inlet and said vent inlet.

14. (original): The carburetor of Claim 13, further comprising a fuel bowl in fluid communication with said fuel inlet and said vent inlet, said control valve disposed between said fuel bowl and said fuel and vent inlets.

15. (original): The carburetor of Claim 13, wherein control valve comprises a bore in said carburetor body, said valve member slidably disposed within said bore.

16. (original): The carburetor of Claim 13, further comprising a vacuum passage fluidly communicating said throat and said control valve, said valve member movable from said first position to said second position responsive to vacuum within said throat.

17. (original): The carburetor of Claim 13, wherein said valve member is connected to a bail assembly, whereby actuation of said bail assembly moves said valve member from said first position to said second position.

18. (original): The carburetor of Claim 13, wherein said control valve further includes a spring, said spring biasing said valve member to said first position.

19. (original): The carburetor of Claim 13, wherein said control valve allows fluid communication through said vent inlet prior to allowing fluid communication through said fuel inlet as said control valve moves from said first position to said second position.

20. (currently amended): A method of operating an internal combustion engine including a fuel tank and a carburetor, comprising the steps of:

opening a control valve responsive to vacuum produced within the engine substantially contemporaneously with starting the engine to allow fluid communication between the fuel tank and the carburetor through a vent line and through a fuel line; and

closing the control valve substantially contemporaneously with engine shut down to prevent communication between the fuel tank and the carburetor through at least one of the vent line and the fuel line.

21. (canceled)

22. (canceled)

23. (original): The method of Claim 20, wherein said opening step further comprises allowing fluid communication through said vent line prior to allowing fluid communication through said fuel line.

24. (currently amended): An internal combustion engine, comprising:

an intake system;

a fuel tank including a filler neck with an inlet, a fuel passage outlet, and a vent passage formed at least partially within said filler neck, said fuel passage outlet and said vent passage each fluidly communicating said fuel tank with said intake system;

a fuel tank cap removably attached to said inlet filler neck and preventing passage of fluid from said fuel tank to the atmosphere.

25. (currently amended): The engine of Claim 24, wherein at least [[a]] another portion of said vent passage is formed within a wall of said fuel tank.

26. (canceled)

27. (currently amended): The engine of Claim 24, wherein ~~said inlet comprises a filler neck~~, said filler neck and said fuel tank cap having cooperating threads in engagement with one another.

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28. (original): The engine of Claim 27, wherein said fuel tank cap and said filler neck include cooperating surfaces, said surfaces sealingly engagable with one another when said fuel tank cap is attached to said filler neck.

29. (currently amended): The engine of Claim 27, wherein ~~at least a portion of said vent passage is formed within said filler neck, said vent passage having includes~~ an opening adjacent an outer rim of said filler neck.

30. (original): The engine of Claim 24, wherein said fuel tank cap includes a vent assembly, said vent assembly allowing fluid communication between an interior said fuel tank and said intake system through said vent passage when said fuel tank cap is attached to said inlet.

31. (original): An internal combustion engine, comprising:

an intake system;
a fuel tank having an inlet and containing liquid fuel and fuel vapors therein;
a vent assembly attached to said inlet, said vent assembly in fluid communication with said intake system and including a fuel-responsive valve normally disposed in a first position and allowing passage of fuel vapors from said fuel tank to said intake system, said valve responsive to contact with liquid fuel to move to a second position in which passage of liquid fuel from said fuel tank to said intake system is prevented; and
a removable fuel tank cap sealingly attached to said vent assembly, whereby liquid fuel and fuel vapors from said fuel tank are prevented from passing from said fuel tank to the atmosphere.

32. (original): The engine of Claim 31, wherein said fuel tank inlet comprises a filler neck extending from said fuel tank, said vent assembly screw-threadingly attached to said filler neck.

33. (original): The engine of Claim 32, wherein said fuel tank and said vent assembly include cooperating engagement structure locking said vent assembly to said fuel tank upon screw-threaded attachment of said vent assembly to said filler neck.

34. (original): The engine of Claim 31, wherein said vent assembly and said fuel tank cap are screw-threadingly attached to one another.

35. (original): The engine of Claim 31, wherein said fuel-responsive valve includes a valve seat and a float, said float not engaging said valve seat in said first valve position, said float engaging said valve seat in said second position by floating on liquid fuel.

36. (new): An internal combustion engine, comprising:

a carburetor;

a fuel tank containing liquid fuel and fuel vapors and supplying liquid fuel to said carburetor and fuel vapors to said engine;

a control valve responsive to vacuum produced within said engine during running of said engine, said control valve including a valve member movable between a first position corresponding to engine shutdown in which said valve member blocks both the supply of liquid fuel from said fuel tank to said carburetor and the supply of fuel vapors from the fuel tank to said engine, and a second position corresponding to running of the engine in which said valve member allows both the supply of liquid fuel from said fuel tank to said carburetor and the supply of fuel vapors from said fuel tank to said engine.

37. (new): The engine of Claim 36, wherein said fuel tank supplies fuel vapors to at least one of an intake passage and a fuel bowl of said carburetor.

38. (new): The engine of Claim 36, wherein said fuel tank supplies liquid fuel to said carburetor and fuel vapors to said engine via separate fuel and vent lines, respectively, said control valve associated with said fuel and vent lines.

39. (new): The engine of Claim 36, further comprising a vacuum line fluidly communicating said control valve and said carburetor, whereby vacuum within said carburetor is communicated to said control valve during running of said engine to move said valve member to said second position.

40. (new): The engine of Claim 36, wherein said control valve comprises a portion of said carburetor.

41. (new): An internal combustion engine, comprising:
a carburetor;
a fuel tank;
separate fuel and vent lines each fluidly communicating said fuel tank and said carburetor; and

a housing containing a fuel valve member and a vent valve member each responsive to vacuum produced within said engine during running of said engine, said valve members movable between first positions corresponding to engine shutdown in which said valve members prevent fluid communication between said fuel tank and said carburetor through said fuel line and said vent line, and second positions corresponding to running of said engine in which said valve members allow fluid communication between said fuel tank and said carburetor through said fuel line and said vent line, respectively.

42. (new): The engine of Claim 41, further comprising a vacuum line fluidly communicating said housing and said carburetor, whereby vacuum within said carburetor is communicated to said housing during running of said engine to move said valve members to said second positions.

43. (new): The engine of Claim 41, wherein said housing comprises a portion of said carburetor.

44. (new): An internal combustion engine, comprising:
a fuel tank containing liquid fuel and fuel vapors;
a carburetor, comprising:
a carburetor body having an air intake passage;
a fuel inlet and a vent inlet, each in fluid communication with said fuel tank; and

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a control valve responsive to vacuum produced within said engine during running of said engine, including a valve member movable between a first position corresponding to engine shutdown in which said valve member prevents fluid communication from said fuel tank to said carburetor through at least one of said fuel inlet and said vent inlet, and a second position corresponding to running of said engine in which said valve member allows fluid communication from said fuel tank to said carburetor through said fuel inlet and said vent inlet.

45. (new): The engine of Claim 44, wherein said carburetor further comprises a fuel bowl in fluid communication with said fuel inlet and said vent inlet, said control valve disposed between said fuel bowl and said fuel and vent inlets.

46. (new): The engine of Claim 44, wherein said carburetor includes a vacuum passage fluidly communicating said air intake passage and said control valve, said valve member movable from said first position to said second position responsive to vacuum within said air intake passage.